14 December 2004

North Atlantic Division – South Atlantic Division

FY2007 Navigation Metrics PDT

Status Update

NAD-SAD FY2007 Navigation Metrics PDT Members

Matt Byrne – Norfolk District
Chris Frabotta – Wilmington District
Randy Hintz – New York District
Ed O'Donnell – New England District
Dave Olson – Philadelphia District
Nelson Sanchez – Mobile District
Frank Reynolds – Wilmington District
Arlene Dietz – Institute for Water Resources
Mark Pointon – USACE Headquarters
Steve Coker – North Atlantic Division
Angie Premo – South Atlantic Division

The Corps Navigation Mission

To provide safe, reliable, efficient, effective and environmentally sustainable waterborne transportation systems for movement of commerce, national security needs, and recreation.

Key words in the Navigation Mission Statement:

- **Safe**
  Known critical safety issues are a priority consideration.
- **Reliable, efficient, effective**
  Important for commerce.
- **Environmentally sustainable**
  Important environmental needs to be considered.
- **Movement of commerce**
  Projects with high value for commerce movement have *high priority*.
- **National security needs**
  Military & Homeland Security needs are priority factors.
- **Recreation**
  This has a *lower funding priority*, but needs to be recognized and considered.

PDT Plan of Action

1. **Identify possible metrics for Navigation (e.g. stakeholder input).**
2. **Discuss & refine list.**
3. **Define each metric.**
4. **Provide rationale for each metric.**
5. **Explain how to quantify (measure) each metric.**
6. **Identify data sources for each metric.**
7. **Propose methods for using metrics.**
8. **Present findings and recommendations to HQ.**

Possible Metrics Discussed

1. BCR - Use 3-5 yr average, Need guidance for O&M, Consistency
2. RBRC Remaining Benefits/Remaining Costs - Not for O&M
3. Value - Tons x ($/Ton), Multiplier?, Inland?, Ports?
4. Use - List uses, Strategic Ports
5. Commercial Tonnage - Use 5 year averages
6. Trip Ton-Miles
7. System Ton-Miles
8. $ per Ton-Mile - system or segment vs trip, Steve to argue
9. % Reduction in delay costs
10. Project Annual Benefits – Total NED
11. Project Annual Costs – NED cost – Not for FY07, need data.
12. Net Benefits – Not for FY07, need better data.
13. Years to complete
14. Other project purposes – e.g. Hydro, Recreation, Environmental, FDR, etc.
15. % Time project available – for that increment.
16. Cumulative NED – Don't need
17. Critical Health & Safety – Need definitions, guidance, yes/no categories
18. Consequences if not funded. – Legal requirement? So What?
19. Purpose – level of service
20. Remarks – additional info to support the request.
21. Project Cost – increment

Possible Metrics Discussed

22. Dependency Uses – special cargo, subsistence, Barry's definition
23. Grandfather provision (for transition period) – consider historic spending?
24. Type of cargo (value)
25. Economic multipliers (value)
26. Economic importance (use)
27. Jobs – primary, secondary, tertiary – (regional benefits, multipliers)
28. Importance to regional economy – (regional benefits, multipliers)
29. Capital investments – (BCR?) local investments
30. Regional equity and Basin equity (Great Lakes) - No
31. Strategic value – military, economic
32. Air quality, environmental comparisons to other transportation modes
33. Watershed vs Project approach – not a metric
34. Landside benefits. – Value of property – no national data – No
35. Vessel operating costs – BCR – Benefits
36. Economic impacts – direct, indirect, induced – Regional
37. Household income – Regional
38. Marginal Value – marginal funding vs marginal benefits – incremental benefits
39. Strategic Value – both military and economic
40. Water storage – multipurpose – better define purpose
41. Fish & wildlife – multipurpose – better define purpose
42. Property values – Regional

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Possible Metrics Discussed

43. Tax dollar income – Regional
44. National Security – Strategic uses, safety
45. Intra and Inter State travel – NED Benefits
46. Harbors of Refuge – Yes, national consistency, definition, parameters
47. Linkages – Ports, waterways, systems – establish long range goal (FY08+)
48. Quality of life issues – noise pollution, vehicle traffic congestion – No
49. Multi-purpose Benefits – Purpose (Hydropower, water safety, recreation, water quality)
50. % delay (locks & dams) – Inland only? (see availability)
51. # of Passengers – short term – long range in economic analyses
52. Vessel trips
53. Containers
54. Subsistence harbors (dependency)
55. Social impacts – Regional
56. Fisheries – need to start collecting info
57. Other Government agencies uses – Coast Guard, DOE, NMFS
58. Reliability – availability?
59. Recreational benefits – BCR – long term – RecBest
60. Congestion mitigation – keeping trucks off highways
61. Infrastructure impacts – Nav O&M or build more Highways – need study – IWR
62. % Drawdown of Trust Funds – 2.1B/MRT – issue not metric?
63. Schedule adherence ratio (CG) = Original project time / current project estimate

Possible Metrics Discussed

64. Downtime (O&M) – Actual Days/ Scheduled Days – reliability, availability
65. Cost Delivery Ratio (CG) = Estimated cost / Actual cost – poor estimating?
66. Sole Transportation Option – only way of transport – oversize cargo, special cargo, water-dependent cargo – value, strategic importance
67. Benefits Foregone – loss if not maintained – BC
68. Needs (long-term) Driven Benefits?
69. Wants – No
70. Corps reputation and public image – No
71. Legal requirement – Y/N with remarks or consequences if Y
72. Return on investment – long term goal
73. CW Program goals – CW Strategic Plan – long term – remarks
74. IWTF Funding – new work, shallow draft, inland, coastal
75. Future Growth vs Investment – Corps projected vision spending for future growth – nothing in current metrics looks toward future needs – only looking at past performance. Need to anticipate future growth and invest accordingly to ready to meet future needs.
76. Managing Risk – consequences

Metrics to Consider For FY2007

- Tons
- $ (Fed Cost) per Ton
- Consequences
- Purpose
- Subsistence – Y/N
- Critical Harbor of Refuge – Y/N
- Availability
- Reliability
- % Delay
- Trip Ton Miles
- Remarks
- # of Boats
- # of Passengers
- # Vessel Trips
- # of Containers
- Legal Requirements
- Value

- Sole Port – Y/N – if Y explain
- Sole Option – Y/N – if Y explain
- Other users – Y/N – if Y specify (USCG, NOAA, USN, DOE, NASA)
- Other purposes – Y/N – if Y specify mission (e.g. Recreation, Environmental, FDR)

Metrics to Consider for FY2008

Issues and Metrics needing more research or study to be useful.

- **NED Benefits**
- **NED Costs**
- **Alternative Modes**
- **Estimated Domestic Value**
- **National Recreational Benefits**
- **Return on Investment – how much you get relative to how much you spend**
- **BCR – need consistency, guidance on application to O&M program**
- **Match Program Goals & Metrics with CW Strategic Plan**
- **Need a Forecast System to evaluate future needs and trends. We are focused on measuring the past. We need some metrics that look forward to future needs.**
- **Value of commodity & projects**
- **Inland vs. Coastal – Problem with comparability of metrics needs to be resolved.**
- **Harbors & channels – how to measure availability and % of delay**

General Discussion Points

- **Use 5 year tonnage averages not single year data. Tonnage trends with time and the economy. Long term averages are more meaningful than single year data.**
- **Use average annual fed cost between maintenance events (for cycles > 5 years) or 5 year average cost (for cycles ≤ 5 years). Otherwise you bias in favor of projects that require more frequent maintenance. Logically, projects that function for long periods without need for maintenance are desirable.**
- **Specify allowable data sources – Ombil, waterborne commerce data, etc. Deviations from allowed sources should be limited, documented, and explained.**
- **Give sample calculations in Budget EC.**
- **Data Quality Control and Quality Assurance needs to be improved. Consider including QC-QA requirements in the EC.**

Working Drafts

Metric: Tons

Rationale: Tons is a familiar measure of commerce that is available through Waterborne Commerce (for deep draft) and is applicable to the majority of deep draft navigation projects. Not as available or reliable for shallow draft.

Measurement: Thousands (five year average)

Data availability: Waterborne Commerce data in OMBIL

* Put Fish Landings tonnage in remarks. Fish Landings Data Source: NMFS and state data (e.g. ACCSP)

Metric: Ton-miles (inland only)

Rationale: A measure of total activity on a given waterway. Not good for non-linear systems (e.g. ports, coastal waters). Not good for comparing projects on systems with significantly different lengths (trip or system).

Measurement: Thousands (five year average)

Data availability: Waterborne Commerce data in OMBIL

Metric: Federal Dollars/Ton

Average annual federal cost between maintenance cycles (for projects with cycles > 5 years), or five year average cost (for projects with cycle ≤ 5 years) divided by the average annual tons for the same period.

Rationale: Dollars/Ton is a good measure of performance of a port or waterway.

Measurement: $/Ton

Data availability: Tons from Waterborne Commerce in OMBIL. Federal Dollars per year averaged in OMBIL.

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Metric: Safety

Eminent threats to life, where safety requirements must be met, i.e. critical maintenance at a lock or dam, critical operations such as high hazard debris in major harbors, etc., where lack of maintenance would result directly into an unreasonable risk to public safety.

Rationale: Life safety.

Measurement: Y (Yes) or N (No), explanation in remarks

Data availability: District to identify critical/high risk safety

Metric: Critical Harbor of Refuge

Critical harbors of refuge are those harbors offering safe haven to boaters that represent the sole site for protection based on a public safety based regional distance criteria.

Rationale: Our navigation mission includes safety; therefore critical harbors of refuge must be maintained.

Measurement: Y (Yes) or N (No), explanation in remarks

Data availability: District/Division determines “critical” harbors based upon rational regional distance.

Metric: Number of Ferry Passengers

Rationale: The number of ferry passengers is an indicator of transportation cost savings and life safety needs.

Measurement: people/year

Data availability: Waterborne Commerce

Metric: Number of Registered Boats

The number of registered vessels (to include recreational vessels) using the waterway or harbor.

Rationale: The number of registered boats using the waterway or harbor gives us a measure of the basic need for navigation for that waterway or harbor. Indicator of both recreation and commerce uses.

Measurement: boats/year

Data availability: District collects from state sources.

Metric: Number of Commercial Vessel Trips

A trip is a vessel movement; see Waterborne Commerce for further definition.

Rationale: Number of commercial vessel trips is an indicator of navigational use of waterways and harbors.

Measurement: total trips/year

Data availability: Waterborne Commerce in OMBIL

Metric: Legal Requirements

Non-deferrable legal responsibilities for operational safety and environmental compliance (e.g. court orders, binding agency agreements).

Rationale: There are some existing non-deferrable legal responsibilities that must be met by the Corps.

Measurement: Y (Yes) or N (No), explanation in remarks

Data availability: Reference documentation by District

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Metric: Subsistence Harbors

Harbors that provide the principal means of receiving essential goods and services for communities dependent for survival upon those goods and services, and for which alternative means of delivery are not practicable.

Rationale: Some localities have no other means of transportation access other than the harbor; therefore life and property are dependent upon the navigation project.

Measurement: Y (Yes) or N (No), explanation in remarks

Data availability: District/user verifies and documents that harbor meets definition of subsistence harbor.

Metric: Sole Option – Sole Transportation Option

Navigation project is the only practicable means of transport (product or people).

Rationale: The sole option identifies critical navigation needs.

Measurement: Y (Yes) or N (No), explanation in remarks

Data availability: District/user verify critical need

Metric: Sole Port – Sole Site Option (Regional or National)

Sites where essential facilities or functions required to serve a critical regional or national need are located only at that site. And, use of an alternate site is not practicable (e.g. refinery facilities, fuel tank farms).

Rationale: Single point of entry is identified for important regional or navigation needs.

Measurement: Y (Yes) or N (No), explanation in remarks

Data availability: District/user need to identify critical single point entry for navigation needs

Metric: Other Purposes

Identify other multipurpose requirements when those purposes are included in the minimum program of other business lines and are not a separable element.

Rationale: Allows smart business decisions to be made and assures identification of the dependency of other high priority project purposes on the navigation purpose of the project.

Measurement: R – Recreation, E – Environmental, F – Flood Damage Reduction, H – Hydropower, W – Water Supply, I – Irrigation; explanation in remarks

Data availability: District Business Line Managers need to coordinate requirements across business lines.

Metric: Critical Government Users

Rationale: There are some projects that are required to serve essential needs of other Government users which can not be met without the project.

Measurement: Y (Yes) or N (No), explanation in remarks

Data availability: District/user identify critical user needs

Metric: Number of TEUS

Total number of loaded TEUS (Twenty Foot Equivalent Units), both domestic and foreign.

Rationale: Number of TEUS is an indicator of navigation commerce.

Measurement: Twenty Foot Equivalent Units

Data availability: Waterborne Commerce

Metric: Value

Dollar value associated with commerce in and out of the project.

Rationale: Value is a fundamental measure of commerce.

Measurement: $$

Data availability: IWR

Metric: Years to Complete Phase

Indicate the years required to complete the phase of the project that is being budgeted, i.e. the feasibility study is scheduled to be complete in 3 years and you are budgeting for the 2nd year of work then you would put a 2 in the space to indicate the remaining two years left to complete the feasibility phase, the one being budgeted and the one required for completion; if your project is under construction and you have a 5 year construction period and you are budgeting the first construction contract, put a 5 in the space to indicate the budget year plus the four remaining that are required to complete the project; and for most O&M work there would be a 1 in the space, however there may be exceptions which should be explained in the remarks.

Metric: Purpose

Explain what is going to be accomplished with the requested incremental funds, i.e. dredging to authorized depth or something less than authorized depth utilizing contracted dredge or hired labor, awarding a contract to perform condition surveys, in-house labor to perform condition surveys or other identified work, providing 10 foot of a 15 foot project to serve 70% of users.

Metric: Consequences

Explain what will happen if the incremental funds are not received and work is not performed, i.e. no contract dredging this FY, the number of vessels that cannot use the project, specific businesses will be impacted/go out of business, national security/military implications, light loading, debris in harbor, vegetation overtaking harbor, specialty manufacturing company would go out of business because it is the only one in the country, special movements such as rockets on barge, only type of coast guard station like the search and rescue station for LA airport. Note, the consequences and purpose should compliment each other.

Metric: Remarks

Any other information that helps justify the need of the associated increment. Explanations should be provided for subsistence harbors, harbors of refuge, legal requirements, other multipurpose requirements, critical government users, sole option, sole port, critical safety requirements, strategic ports, beneficial uses, watershed, regional sediment management, fish landings, high value commerce, impacts at locks upstream and downstream, ferries, offshore islands, supporting documentation for any numbers that do not come directly from Waterborne Commerce or OMBIL. Note, political comments are not warranted.

The following metrics apply to GI (PED) and CG only:

Metric: Benefit to Cost Ratio (BCR)

The BCR is evaluated based upon benefits in the latest approved document, such as Feasibility Report, Chief of Engineers Report, Limited or General Reevaluation Report (LRR or GRR), Engineering Documentation Report (EDR), or other report. In computing the BCR, deflate the current project costs to the price levels of such benefits. See additional guidance in the EC.

Metric: Remaining Benefit-Remaining Cost Ratio (RBRCR)

Use the guidelines provided in the EC to compute the RBRCR at the applicable rate.